Small Business Innovation Research/Small Business Tech Transfer

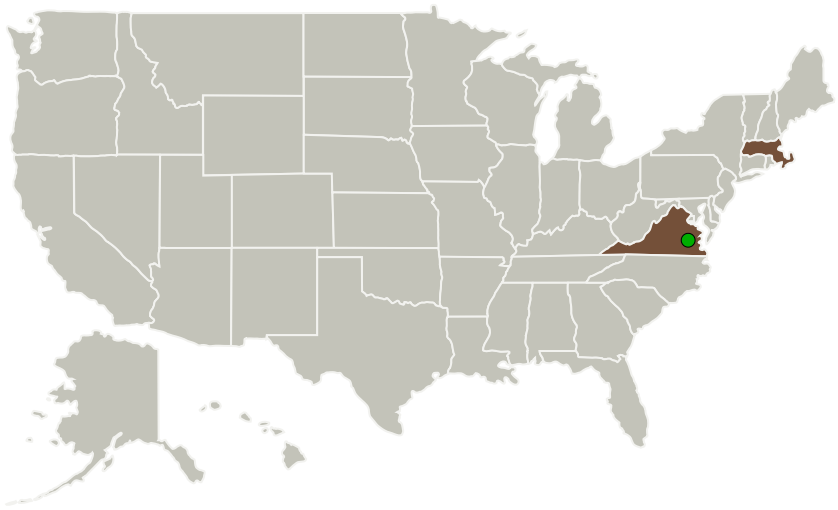
Aeroelastically Tailored Wing Structures (ATWIST), Phase I

Completed Technology Project (2013 - 2013)

Project Introduction

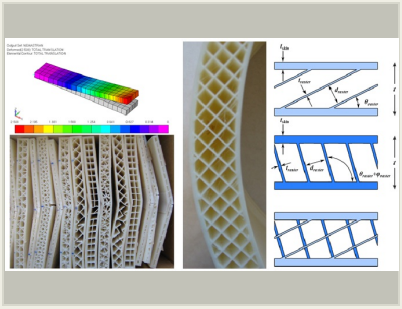
Aurora will develop a novel composite sandwich structure that is capable of providing a coupled bending-torsional stiffness with nonlinear elastic effects, capable of achieving a tailored aeroelastic response over a wide range of flight conditions. Such a structure will make use of an additive manufactured core with highly tailored and optimized cellular substructure. The cellular structure will be functionally graded in the spanwise and chordwise directions to provide a coupled bending-torsional stiffness response. Fiber reinforced composite facesheets will provide strength. Utilizing the core structure to couple the bending-torsional stiffness of the composite may allow the composite to remain balanced and symmetric, thus avoiding induced stresses and/or warping during manufacturing.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Massachusetts	Virginia



Aeroelastically Tailored Wing Structures (ATWIST)

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Aeroelastically Tailored Wing Structures (ATWIST), Phase I

Completed Technology Project (2013 - 2013)

Project Transitions

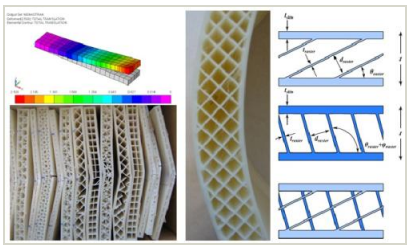
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137979)*

Images



Project Image
Aeroelastically Tailored Wing Structures (ATWIST)
(https://techport.nasa.gov/image/133289)

Project Management

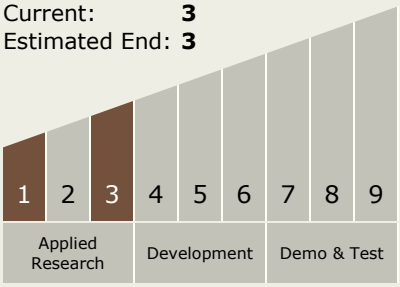
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Benjamin Smith

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.1 Lightweight Structural Materials

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System